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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,922	09/24/2003	Garo J. Derderian	MI22-2296	8459

21567 7590 08/01/2006

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EXAMINER	
GURLEY, LYNNE ANN	

ART UNIT	PAPER NUMBER
2812	

DATE MAILED: 08/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/671,922	DERDERIAN ET AL.	
	Examiner	Art Unit	
	Lynne A. Gurley	2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *35-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *35-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

LYNNE A. GURLEY
PRIMARY PATENT EXAMINER
TC 2800, AU 2812

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the amendment filed 5/4/06.

2. Currently, claims 35-45 are pending.

Specification

3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 35-45 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 22-34 and claims 12-21 of copending

Application No. 11/078,537 and 11/078,822, respectively. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter of the claimed invention is co-extensive requiring an electric field distribution which is a gradient.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 35-40, 42-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Chiang et al. (US 6,800,173, dated 10/5/04, filed 7/9/01 with provisional filing dates of 4/5/01 and 12/15/00).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 35-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. (US 6,800,173, dated 10/5/04, filed 7/9/01 with provisional filing dates of 4/5/01 and 12/15/00).

12. Chiang shows the method as claimed in figures 30-31, and corresponding text, with a substrate 8 subjected to an ALD process with plasma (column 23, lines 35-67; column 24; column 25; column 26-33). The substrate is biased so that inherently, there is an electric field gradient and, an electric field inherently has a magnetic field associated with it. Pulsing the molecules is disclosed (column 26, lines 29-67; column 27-30). Orientation of the molecules to the substrate is disclosed (column 31, lines 42-62). A new configuration for the electric field

gradient is inherent since the change in the deposition parameters for the new material will require a different condition.

13. Chiang lacks anticipation only in not explicitly teaching that non-ionized and electrically neutral molecules are used; the first molecules are ammonia and the second are SiCl4; the vector limitations in claim 44; and that the angular difference between the first and second vectors is about 180 degrees.

14. It would have been obvious to one of ordinary skill in the art to have had the first molecules be ammonia and the second are SiCl4; to have had the vector limitations in claim 44; and to have had the angular difference between the first and second vectors be about 180 degrees, in the method of Chiang, with the motivation that if silicon nitride deposition is desired in the device, ammonia and SiCl4 would be obvious precursors to form the silicon nitride layer; with the motivation that the vector relationship is dependent upon the desired rate of deposition, the precursor/molecules being deposited, so that the bias on the substrate (positive or negative, with respect to the chamber, which would give the 180 degree difference in the vector) may be optimized to suit the needs of the process and of the desired result.

15. Claims 35-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. (US 6,800,173, dated 10/5/04, filed 7/9/01 with provisional filing dates of 4/5/01 and 12/15/00) in view of Norman et al. (US 6,869,876).

16. Chiang shows the method as claimed in figures 30-31, and corresponding text, with a substrate 8 subjected to an ALD process with plasma (column 23, lines 35-67; column 24; column 25; column 26-33). The substrate is biased so that inherently, there is an electric field

gradient and, an electric field inherently has a magnetic field associated with it. Pulsing the molecules is disclosed (column 26, lines 29-67; column 27-30). Orientation of the molecules to the substrate is disclosed (column 31, lines 42-62). A new configuration for the electric field gradient is inherent since the change in the deposition parameters for the new material will require a different condition.

17. Chiang lacks anticipation only in not explicitly teaching that non-ionized and electrically neutral molecules are used; the first molecules are ammonia and the second are SiCl4; the vector limitations in claim 44; and that the angular difference between the first and second vectors is about 180 degrees.

18. Norman teaches an ALD process wherein ammonia is used as a precursor.

19. It would have been obvious to one of ordinary skill in the art to have had non-ionized and electrically neutral molecules used; to have had the first molecules be ammonia and the second are SiCl4; to have had the vector limitations in claim 44; and to have had the angular difference between the first and second vectors be about 180 degrees, in the method of Chiang, with the motivation that if silicon nitride deposition is desired in the device, as taught in Norman, ammonia and SiCl4 would be obvious precursors to form the silicon nitride layer; with the motivation that the vector relationship is dependent upon the desired rate of deposition, the precursor/molecules being deposited, so that the bias on the substrate (positive or negative, with respect to the chamber, which would give the 180 degree difference in the vector) may be optimized to suit the needs of the process and of the desired result.

Response to Arguments

20. Applicant's arguments with respect to claims 35-45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See the previously submitted PTO Form 892.

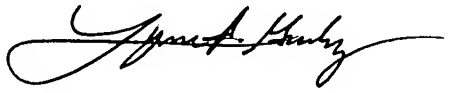
22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne A. Gurley whose telephone number is 571-272-1670. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Lynne A. Gurley
Primary Patent Examiner
Art Unit 2812

LAG
July 24, 2006